

MINING UTAH'S HERITAGE WORKBOOK NEWS



Utah Abandoned Mine Reclamation Program

January 2002

VISIT OUR WEB SITE AT <http://dogm.nr.state.ut.us/>
for information about Utah's natural resources and updates on current happenings.

About the Workbook

Mining Utah's Heritage was designed to address and enhance portions of the core curriculum for the fourth grade. The AMR Program staff worked with the State Office of Education in developing the workbook. The abandoned mine safety video, **Utah's Abandoned Mines: Stay Out and Stay Alive!**, has been placed in each elementary school in Utah. This swift-moving video features interviews with people involved in accidents at abandoned mines. The extensive footage of abandoned mines and their hazards is a good way to introduce the workbook to your class! Check with your media center, librarian or fellow teachers. If you cannot locate a video at your school, contact Jan Morse at (801)-538-5305.

Bats of Utah Poster Now Available

A new poster entitled *Bats of Utah* was recently printed and is available for distribution. Numerous agencies and organizations were involved in its development. The poster displays 11 of Utah's 18 more charismatic bat species. Food, habitat and roosting preferences are listed for each species and a distribution map shows where each species has been observed in Utah.

These beautiful 24 X 36 inch color posters are available through Project Wild in the Utah Division of Wildlife Resources. For more information and to obtain copies of the poster, contact Diana Vos, at Project Wild: 538-4719.

Why is Mining Important to You?

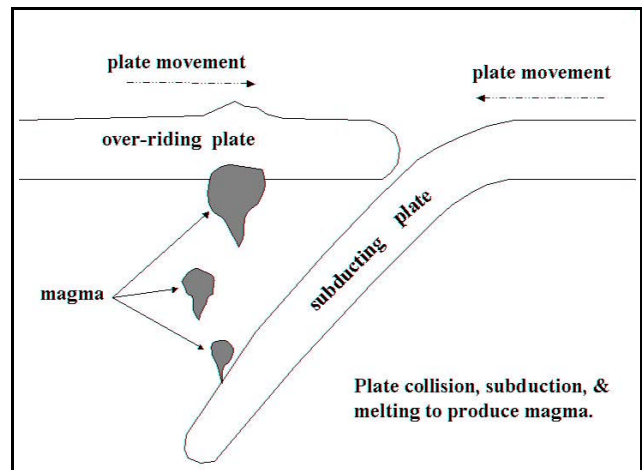
Mining is an integral part of your everyday life. The slogan "if it wasn't grown, it was mined" is true. Think about all the things you use everyday: your cup is either made of clay or plastics, both of which come from materials taken from the earth. Your car, telephone, computer, your lightweight mountain bike--all couldn't be made without raw materials that come from mining. Mining can't occur without some environmental impact. But today's mining operations are required to have permits which guarantee that all the adverse impacts will be cleaned up. If we are to live the lifestyle to which we have become accustomed, mining has to happen. The current mining industry is not the same industry that created the abandoned mines presenting a serious physical safety hazard to the public.

Where Does Gold Come From?

Many of the first settlers in the West came to Utah in the late 1800s seeking gold. But none of the gold-seekers understood the origin of this precious metal. They knew that gold occurred in the rocks, but did not know what force of nature had put it there. How gold got into the rocks largely remained a mystery until the 1960s when geologists demonstrated that whole continents and ocean basins moved. They theorized that Earth has many, large, thick slabs of rock that form its outermost layer. They called these "plates" which move horizontally and interact with one another at their boundaries. The theory of plate movement later became known as Plate Tectonics.

Often, a single plate contains entire continents, such as North America, and portions of adjacent ocean basins. When these tectonic plates collide with one another, one plate usually dives under the other plate through a process that geologists call **subduction**. The plate that dives under the other is called the

subducting plate. The upper, over-riding plate will buckle under the pressure of the collision, creating high, rugged mountains like the Wasatch Mountains east of Salt Lake City. The subducting plate begins to melt as it reaches depths of about 100 km, where temperatures are around 1200° Celsius. At this temperature, the solid rock turns into liquid rock called magma. This hot, liquid magma rises up through the upper plate often carrying superheated water (hydrothermal solutions) that contains precious metals like gold in solution. As the magma



and hot solutions near the earth's surface, they begin to cool and solidify.

This whole process of plate subduction, melting to create magma, and the cooling of that magma often takes tens of million of years. If enough gold, or for that matter, any element or mineral is present in the cooled rock, then it may be mined and sold at a profit. Such a resource is called an ore deposit. Plate tectonics is chiefly responsible for the presence of ore deposits including gold that occur in Utah.

Today, gold is mined at the Kennecott Open-Pit Mine in Bingham Canyon west of Salt Lake City. Gold is used widely in jewelry because it does not tarnish and is very heavy and malleable and in computers because it conducts electricity very well. At the Kennecott Mine, gold is mined as a by-product of copper production in an area where magma intruded the rocks of the Oquirrh Mountains over 30 million years ago. In this particular instance, the ultimate origin of the gold (and the copper) was from the melting of the upper part of the Farallon Plate that subducted beneath the North American plate. The resultant magma intruded the rocks of the North American Plate to form an ore deposit in the Oquirrh Mountains. The Farallon Plate no longer exists since it was completely consumed under the North American plate millions of years ago!

More Information

For more information about resources you can use including field trips, websites, and videos, call or write Jan Morse, Educational Coordinator for the Abandoned Mine Reclamation Program at the Division of Oil, Gas and Mining, P.O. Box 145801, Salt Lake City, Utah 84114-5801. Phone 801-538-5305, E-mail nrogm.jmorse@state.ut.us